

Functional Vascular Anatomy of the Head and Neck

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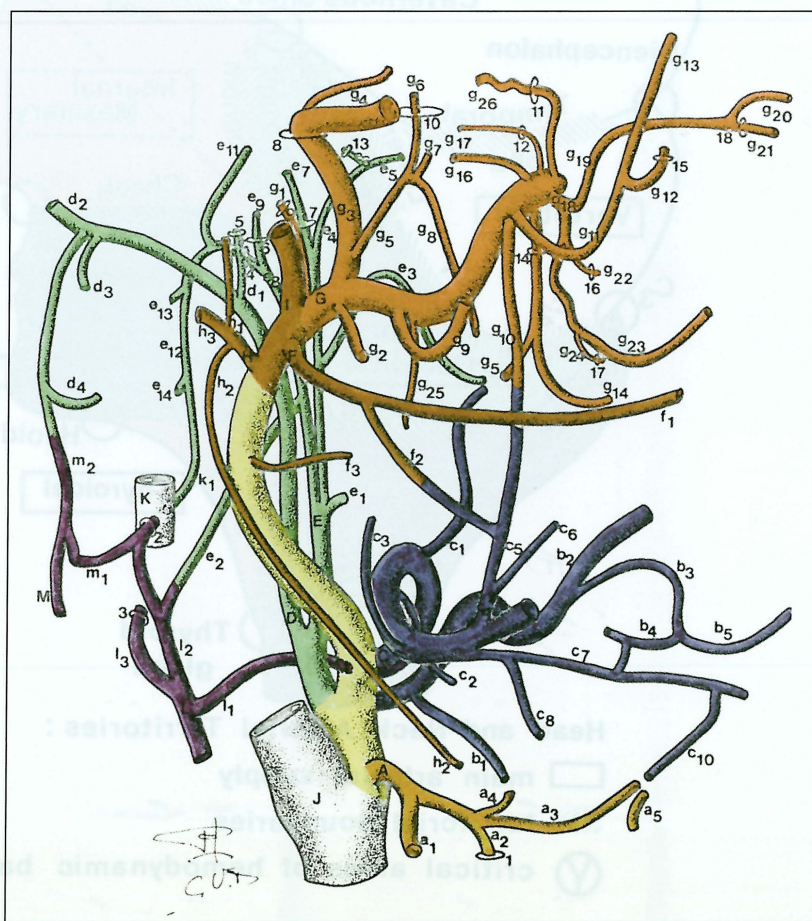
The External carotid artery (ECA) supplies all the structures of the head and neck area, excluding the central nervous system and optic nerve in general. However, as seen in some species, the ECA can supply part (or entire) of the intracranial nervous system even in man.

Traditionally, the external carotid arterial system and its branches have been described as arterial tree, which divides into multiple branches. However, this concept does not apply in all situations, and gives an erroneous idea of not only consistency in the anatomy of this system, but also the reliability on its branching modality.

On the contrary, the ECA and its primary branches are extremely variable, and their embryonic origins are different. Therefore, we insist that ECA system should be analyzed as a collection of various primary branches, not as an arterial tree. Thus, the embryology of the cervical carotid arteries will be discussed first.

There are dual systems within the external carotid territory, the neuro-meningeal and the oral

systems, which regroup pivotal arterial sources: superior laryngeal, pharyngo-occipital and maxillo-meningeal arteries for the former and superior thyroidal, facial and lingual for the latter one. The cutaneous and muscular branches will be grafted on this arterial frame as an em-



bryo grows and develops. Three types of variations will then be encountered: neuromeningeal, oral, and cutaneo-muscular. In addition, junctions with central nervous arterial system (internal carotid and vertebral arteries) and lower cranial arterial system will create new variations.

Knowledge of anatomy of the external carotid system and understanding of these variations will improve reliability and safety of en-

dovascular therapeutic procedures. Dangerous anastomoses and territories represent the major dangers of therapeutic angiography therefore; we are emphasizing again this anatomy.

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